

WHAT IS CLAIMED IS:

1. A method for determining whether a molecule affects the function or activity of a sterol biosynthesis pathway in a *S. cerevisiae* cell comprising:

(a) contacting said cell with, or recombinantly expressing within said cell, said molecule;

(b) determining whether RNA expression or protein expression in said cell of a target polynucleotide sequence is changed in step (a) relative to the expression of said target polynucleotide sequence in the absence of said molecule, said target polynucleotide being a sequence operatively linked to a promoter native to *S. cerevisiae* gene YMR325W, or homologs thereof; and

(c) determining that said molecule affects the function or activity of said sterol biosynthesis pathway if expression of said target polynucleotide is changed, or determining that said molecule does not affect the function or activity of said sterol biosynthesis pathway if expression of said target polynucleotide sequence is unchanged.

2. The method of claim 1, wherein said target polynucleotide sequence comprises a marker gene; wherein step (b) comprises determining whether the RNA expression or protein expression of said marker gene is changed in step (a) relative to the expression of said marker gene in the absence of the molecule; and wherein step (c) comprises determining that said molecule affects the function or activity of said sterol biosynthesis pathway if expression of said marker gene is changed, or determining that said molecule does not affect the function or activity of said sterol biosynthesis pathway if expression of said marker gene is unchanged.

3. The method of claim 1 which is a method for determining whether said molecule inhibits sterol biosynthesis such that said cell contacted with the molecule exhibits a lower level of sterol than a second cell which is not contacted with said molecule.

4. The method of claim 1, wherein step (b) comprises determining whether RNA or protein expression of a target polynucleotide sequence regulated by a promoter native to YMR325W is changed.

5. The method of claim 1, wherein step (b) comprises determining whether RNA expression is changed.

6. The method of claim 1, wherein step (b) comprises determining whether protein expression is changed.

5 7. The method of claim 1 which is a method for determining whether said molecule inhibits sterol biosynthesis, and wherein step (c) comprises determining that said molecule inhibits sterol biosynthesis if expression of said target polynucleotide sequence in step (a) is increased relative to expression of said target polynucleotide sequence in the absence of said molecule.

10 8. The method of claim 1, wherein the *S. cerevisiae* cell is a cell that recombinantly expresses said target polynucleotide sequence.

9. The method of claim 1, wherein step (a) comprises contacting said cell with said molecule, and wherein step (a) is carried out in a liquid high throughput-like assay.

15 10. The method of claim 1, wherein step (a) comprises contacting said cell with said molecule, and wherein step (a) is carried out in a solid plate halo assay.

11. The method of claim 1, wherein step (a) comprises contacting said cell with said molecule, and wherein step (a) is carried out in an agar overlay assay.

12. A method for determining the effect of a molecule upon the function or activity of a sterol biosynthesis pathway comprising:

- 20 (a) contacting a *S. cerevisiae* cell with, or recombinantly expressing within said cell said molecule;
- (b) detecting a change in RNA expression or protein expression in said cell of a target polynucleotide sequence relative to the expression of said target polynucleotide sequence in the absence of said molecule, said target polynucleotide sequence being regulated by a promoter native to *S.*
- 25 *cerevisiae* YMR325W gene, or homologs thereof; and

- (c) determining the effect of said molecule upon the function or activity of said sterol biosynthesis pathway based upon the change in RNA expression or protein expression.

5 13. A method for monitoring activity of a sterol biosynthesis pathway in a *S. cerevisiae* cell exposed to a molecule comprising:

- (a) contacting said cell with, or recombinantly expressing within said cell, said molecule;
- 10 (b) determining whether RNA expression or protein expression in said cell of a target polynucleotide sequence is changed in step (a) relative to expression of said target polynucleotide sequence in the absence of said molecule, said target polynucleotide sequence being regulated by a promoter native to a *S. cerevisiae* YMR325W gene, or homologs thereof; and
- 15 (c) determining that the activity of the sterol biosynthesis pathway in said cell is changed if expression of said target polynucleotide is determined to be changed in step (b), or determining that the activity of the sterol biosynthesis pathway in said cell is unchanged if expression of said target polynucleotide is determined to be unchanged in step (b).

20 14. The method of claim 12, wherein step (a) comprises contacting said cell with said molecule.

15. The method of claim 13, wherein step (a) comprises contacting said cell with said molecule.

16. The method of claim 12, wherein step (a) comprises recombinantly expressing within said cell said molecule.

25 17. The method of claim 13, wherein step (a) comprises recombinantly expressing within said cell said molecule.

18. The method of claim 12, wherein step (b) comprises detecting an increase in said RNA or protein expression, and step (c) comprises determining that said effect of said molecule is to inhibit the function or activity of said sterol biosynthesis pathway.

19. The method of claim 13, wherein step (b) comprises determining that said expression is increased, and step (c) comprises determining that the activity of said sterol biosynthesis pathway is inhibited.

20. The method of claim 12, 13, 14, 15, 16, 17, 18, or 19, wherein said target polynucleotide sequence comprises *S. cerevisiae* YMR325W.

21. A method for identifying a molecule that modulates expression of a sterol biosynthesis pathway target polynucleotide sequence comprising:

(a) recombinantly expressing in a *S. cerevisiae* cell, or contacting a *S. cerevisiae* cell with, at least one candidate molecule; and

(b) measuring RNA or protein expression in said cell of a target polynucleotide sequence, said target polynucleotide sequence being regulated by a promoter native to a *S. cerevisiae* YMR325W gene, or homologs thereof, wherein an increase or decrease in expression of said target polynucleotide sequence relative to expression of said target polynucleotide sequence in the absence of said candidate molecule indicates that said candidate molecule modulates expression of said sterol biosynthesis pathway target polynucleotide sequence.

22. The method of claim 1 wherein said promoter comprises SEQ ID NO: 3, or homologs thereof.

23. The method of claim 2 wherein said marker gene is selected from the group consisting of green fluorescent protein, red fluorescent protein, blue fluorescent protein, luciferase, LEU2, LYS2, ADE2, TRP1, CAN1, CYH2, GUS, CUP1 and chloramphenicol acetyl transferase.

24. A method for determining whether a first *S. cerevisiae* cell is mutant for a sterol biosynthesis pathway gene comprising:

(a) in said first *S. cerevisiae* cell, determining the RNA or protein expression of a target polynucleotide sequence, said target polynucleotide sequence being regulated by a promoter native to a *S. cerevisiae* YMR325W gene, or homologs thereof, wherein said cell is not being exposed to an inhibitor of a sterol biosynthesis pathway;

- 5 (b) determining whether the RNA and/or protein expression of said target polynucleotide sequence determined in step (a) is changed relative to the RNA and/or protein expression of said target polynucleotide sequence in a second *S. cerevisiae* cell which is believed to be wild-type for sterol biosynthesis genes; and
- 10 (c) determining that said first *S. cerevisiae* cell is mutant for a sterol biosynthesis pathway gene if expression of said target polynucleotide sequence is determined to be changed in step (a), or determining that said first *S. cerevisiae* cell is not mutant for a sterol biosynthesis pathway gene if expression of said target polynucleotide sequence is determined to be unchanged in step (b).

25. The method of claim 1, wherein said molecule is selected from the group consisting of natural products, proteins, and small molecules.

26. The method of claim 25, wherein said molecule is purified.

15 27. The method of claim 25, wherein said molecule is not substantially purified.

28. The method of claim 1, wherein step (a) comprises contacting said cell with a second, test cell, wherein said test cell produces said molecule.

20 29. The method of claim 28, wherein said molecule is released by said test cell.

30. The method of claim 28, wherein said molecule is secreted by said test cell.